
SHOUT
SHARE
IT

The American Museum of Natural History



1869
THE LIBRARY

XV. Family SYLVIIDAE.

Family SYLVIIDAE.

(Plates 49—65).

The genera *Sylvia*, *Phylloscopus*, *Hypolais*, *Calamodus*, *Acrocephalus* and *Locustella* form in respect of their oological relation towards each other a heterogeneously composed Family.

This heterogeneity exists not only among the genera, but — with the exception of the genus *Locustella* — it is also found among species, mutually, belonging to one genus.

The genus *Sylvia* includes one species, *S. sylvia* — so remarkable from an oological point of view —, which through a few of its several types has some points of contact with *Acrocephalus*-species, namely with *strepera* and *palustris*.

In the genus itself *curruca, atricapilla* and *simplex* further form an oologically clearly specialized group. In *curruca* variations occur which point to *sylvia*.

The genus *Phylloscopus*, in which *sibilatrix* and *collybita* are more closely allied oologically to each other than *trochilus* is to one of the two first mentioned species, occupies an independent place in respect of the other genera; when the colour is left out of consideration, the *nature* of the *markings* of the *coarsely* spotted type of *trochilus* might perhaps lead one to mistake it for a type of *sylvia* resembling it.

Through both the texture of the shell and the exceptional ground colour, the genus *Hypolais* stands completely isolated. KLEINSCHMIDT [1]) sees in the black speckles which often occur concentrically in the spots of *Acrocephalus palustris* a certain homogeneity with the markings of *hypolais*-eggs. These speckles are found, however, in greater or smaller numbers in many other species with spotted eggs, belonging to different Families; in the case of the *Sylviidae* I find them on eggs of *S. sylvia, curruca, atricapilla, simplex, Ph. sibilatrix, trochilus* and *collybita;* further on those of *A. arundinaceus* and *strepera;* and, finally, although in very small numbers and minute in extent, on eggs of *C. schoenobaenus*. The speckles in question which, in my opinion, consist of pigment thickened locally, varying greatly quantitatively, and only conglutinated in a slight measure with the uppermost layer of the shell, form therefore, no specific characteristic of *A. palustris* through which *hypolais* is alleged to show oological resemblance to that very species.

In the genera *Calamodus* and *Acrocephalus* the species *aquatica* and *schoenobaenus* on the one side and *palustris, strepera* and *arundinaceus* on the other belong together oologically; the last named species stands closest to *palustris*. The existence of some relationship between *Acrocephalus* and *Sylvia* — formed by certain types of *S. sylvia* and the *palustris*-group — has already been pointed out above.

As regards the genus *Locustella* I can point to no oological relationship whatever between it and any one of the other genera of the Family; this genus stands by itself in both the texture and the marking of the eggshell. THIENEMANN considered that there was a certain relationship in texture between *naevia* and *A. strepera*, and between *luscini-*

[1]) Journal für Ornithologie, 51 (1903), p. 483.

oides and C. *schoenobaenus*; I have, however, after as careful as possible an examination of the shells failed to ascertain the existence of such a relationship. What I do find is a resemblance, and a fairly considerable one too, in texture to *Motacilla alba*, and in a stronger measure even to *Lullula arborea;* the character of the marking of the two *Locustella*-species corresponds, moreover, in a striking manner to that of certain *alba*- and *arborea*-types.

In conclusion a few remarks are subjoined respecting certain species, which should be inserted here rather than in the concise text facing each plate.

SYLVIA SYLVIA (L).

One of the types is characterized by the peculiarity that after the last deposit of pigment the whole eggshell is finally covered again with a thin layer of carbonate of lime which gives to it the appearance of being coloured more or less *plain ;* apart from their size, the eggs of *Sylvia nisoria Bechst.* correspond fairly well on the whole to this type.

In NAUMANN [1]) it is wrongly stated that eggs spotted *reddish brown* do not occur ; they certainly do occur.

It is noteworthy that HEWITSON [2]) mentions in respect of *sylvia*-eggs wich — as he himself says — he saw in *large numbers :* — „neither do they present any remarkable varieties". Judging from the two drawings which he gives, he seems only to have known the greenish yellow type. The question suggests itself in this connection : Did at that time perhaps only one of the egg-types occur in England ?

[1]) Naturgeschichte der Vögel Mitteleuropas (neu bearb.). Band II, p. 179.

[2]) W. C. HEWITSON, British Oology, 1st. ed. (1838). Vol. I, pl. CXVI.

SYLVIA ATRICAPILLA (L).

The eggs of this species are subject to considerable variation in size as well as colour; their relation to those of *simplex* is particularly close. The spots are mostly not so sharply outlined and occur as a rule more thickly than those on *simplex*-eggs; the colour of the spots is connected with the ground colour: those with a whitish, reddish or brownish ground colour are spotted brightest, those with a greyish ground colour faintest. On by far the most eggs the lower and middle spots dominate; blending together they frequently cover the larger part of the surface, thereby giving the eggs a *marbled* appearance.

In the „Catalogue of the Collection of Birds' Eggs in the British Museum", part IV (1905), two eggs are depicted on plate VIII (fig. 10 and 14) which, on a white ground colour, are marked on the surface with large chestnut brown spots round the thicker end and for the rest with a few small spots and speckles of like colour.

Erythrism frequently occurs.

SYLVIA SIMPLEX LATHAM.

Eggs of which — as is frequently the case — the lower and middle spots are blended together while the uppermost are wholly lacking or almost so, have a *marbled* appearance. As is also the case with *atricapilla* the uppermost spots are rarely large, and they, as well as the speckles, are usually surrounded by a *penumbra*. The ash-grey and yellowish brown spots are always the largest. On the whole the *ground colour* is *brighter* than that of *atricapilla*-eggs; the latter never have the large loam-brown spots which occur on *simplex*-eggs while the *reddish* ground colour, which is frequently to be found on *atricapilla*-eggs, does *not* seem to occur on *simplex*-eggs.

CALAMODUS AQUATICA (Gmelin).

This species, which selects extensive marshes by preference for its home, undoubtedly formerly existed in large numbers locally in the Netherlands as a breeding bird, as was the case with *Loc. luscinioides* also. THIENEMANN received several nests in the years 1845—1856 from the environs of Rotterdam (through the intermediary of a MR. LÖBBECKE).

ACROCEPHALUS STREPERA (Vieillot).

NAUMANN mentions the occasional occurrence of eggs which are aberrant in shape as well as in marking, and which are described as follows: „elongated ovoidal; dirty white (brownish rather than „greenish) ground colour; marked with many dirty brown (rarely „ashgrey as well) speckles and similar (only darker) large spots at „the thicker end, which frequently form a very broad ring covering the „ground colour of the basal portion of the eggshell. Intermediate forms „between this aberration and the ordinary type are unknown". Judging from the description — leaving the shape out of consideration — fig. 20 of Plate VIII in Part IV of the „Catalogue of the Collection of Birds' Eggs in the British Museum" shows such a *strepera*-egg; it reminds one most of one of the rarer egg-types of *S. sylvia* and of a certain variety of *simplex*-eggs, of which, curiously enough, specimina are shown on the same plate (fig. 11 and 13). THIENEMANN held *strepera* and *palustris* to be one species, frequently passing, *oologically as well*, into each other; although in the system they are now separated as two so-called good species, I nevertheless consider — on the ground of what is subjoined — that it is wrongly attributed to a confounding of the eggs of one species with those of the other where the said author says of a set of *strepera*-eggs that in character

they strongly incline to those eggs which — to use his own words [1]) — „man der *Sylvia palustris* zuschreibt;" or where he further mentions a set of eggs of which four belonged to the ordinary *strepera*-type and one bore a *palustris*-character. In both cases the description of the nest and of its site points unequivocally to *strepera;* the last mentioned aberrant egg (depicted in THIENEMANN 's work—Table XXI, fig. 7, sub *d*) is, in my opinion, wrongly rejected as a *strepera*-egg and attributed to *palustris*, as I have known similar *strepera*-eggs. Through the kindness of Mr. M. H. A. L. MERKELBACH (Rolduc, prov. Limburg) I saw a set of *strepera*-eggs (*Withem*, prov. Limburg, 16-VII-'09; the nest and its site were typical of the species) belonging to his collection. Of the four eggs of this set one is spotted normally, but only slightly; *the other three, however, correspond both in shape and marking wholly to* palustris-*eggs on which the black speckles occur but which lack the extremely small, light grey spots occurring close together (which form a characteristic of the last named species).*

When carrying out my examinations of eggshells I discovered in the deeper layers of normal shells the marking of the three above mentioned abnormal *strepera*-eggs; in the case of the latter the deposition of pigment which must take place last in the order of pigmentation (and which gives a marbled appearance to eggs of a normal marking) was omitted, in consequence of which circumstance their colouration remained in a more original stage.

ACROCEPHALUS PALUSTRIS (Bechstein).

Two types can be distinguished by their markings: one in which

[1]) F. A. L. THIENEMANN, Fortpflanzungsgeschichte aller Vögel. (Leipzig, 1845—56), p. 192.

the spots which lie deeper dominate, and the second in which those spots only occur sparingly and are of small size; the character of the last mentioned type shows much resemblance to that of *arundinaceus*-eggs.

In „British Birds" (Vol. II, p. 185) P. F. BUNYARD says that *palustris*-eggs of the Continent appear to him to be smaller and more pointed than the British eggs, which as regards the size NORMAN GILLROY holds to be certain (l. c. p. 235).

LOCUSTELLA LUSCINIOIDES (Savi).

It appears from the Catalogue [1]) of WOLLEY'S Collection (now in the Zoological Museum of Cambridge University) that this species was formerly also indigenous in Schouwen (Zeeland), where it was found breeding near Zierikzee (13th June 1857); further also at Waabru (sic), Netherlands (20th May 1858), by which, I suspect, Woubrugge (Zuid-Holland) must have been meant; and finally also near Ouderkerk (without indication of the Province).

In the above mentioned Collection there is an aberrant egg (the other ones of the set were perfectly alike in character) which on account of its *particularly dark* brown and also *exceptionally large* spots is described as „most abnormal in colouring" (Holland, s.l., about 1858).

It is not clear to me why YARRELL [2]) considers THIENEMANN'S [3]) statement that he possessed *luscinioides*-eggs from the Thuringian bogs, which were perfectly similar to eggs found by the latter in Holland (near Rotterdam), is open to objection.

---

[1]) Ootheca Wolleyana, edited by ALFRED NEWTON. (London, 1864—1907). Part II, p. 326.

[2]) A history of British Birds, by WILLIAM YARRELL. (4th. ed. London, 1871—1885). Vol. I, pag. 395, 1st. note.

[3]) l. c. p. 202, note.

Family SYLVIIDAE.

Sylvia sylvia (L.) [1] — Whitethroat.

(Plates 49—51, fig. a-l).

(Snouckaert: Avifauna Neerlandica, p. 39, No. 89).

Colour of surface of shell:	greenish-white, -grey or-yellow; bluish white, reddish yellow.
Colour of spots:	the colouring consists mostly of a cloudy marking in darker variegations of the ground colour; spots and speckles lying more or less deep are of a leaden grey appearance (in various shades); at the surface there are sometimes large reddish brown (oörhodein) spots. *Characteristic of this species are leaden grey spots at the base where they mostly form a very distinct ring or closed cap.*
Average dimensions:	18.8 × 13.9 millimetres.
Average weight of shell:	0.114 gram.
Texture of shell:	not specially characterized.
Shape:	usually slightly shorter and more bellied than those of the other species of this family.
Nest:	consists of vegetable materials, especially seed down and material spun by insects; lined with hair. [2]
Site of nest:	as a rule near the ground, in various shrubs; also in tall grass, and on arable land where there are many weeds; always under the shelter of luxuriant vegetation.
Number of eggs:	5—6 (after-set: 4—5).
Breeding season:	May—July.
Duration of incubation:	about 13 days.

---

[1]) See also for this species the general remarks respecting the Family.

[2]) Mr. G. WOLDA (Wageningen, prov. Gelderland) informed me that a few years ago he found at Oranje-Nassau's Oord a *sylvia*-nest which was pierced on the outside with about 120 *leaves of pear blossom.*

Family SYLVIIDAE.

Sylvia curruca (L.) — Lesser Whitethroat.

(Plate 52, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 39, No. 91).

Colour of surface of shell:	creamy white; slightly greenish, sometimes brownish.
Colour of spots:	greyish brown; brownish yellow; when lying deeper they appear to be of a violet grey colour. The larger or smaller spots of irregular shape are accompanied by a few large blotches with blurred edges.
Average dimensions:	16.5 × 12.5 millimetres.
Average weight of shell:	0.085 gram.
Texture of shell:	bears no special characteristic.
Shape:	mostly short-compressed; frequently also rotund.
Nest:	consists of vegetable materials, lined with hair.
Site of nest:	mostly not far from the ground in various shrubs, especially in thorn bushes and hedges.
Number of eggs:	5—6, sometimes 4.
Breeding season:	May—June.
Duration of incubation:	about 13 days.
Remark:	*Curruca*-eggs resemble one of the *simplex*-types most, but are considerably smaller.

Family SYLVIIDAE.

Sylvia atricapilla (L.) [1] — Blackcap.

(Plate 53, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 39, No. 92).

Colour of surface of shell:	greyish-, yellowish-, brownish- or reddish-white; sometimes faintly bluish-white, all in different, more or less pure shades.
Colour of spots:	brown, in various variegations; when lying deeper they appear to be of a violet grey colour.
Average dimensions:	19.3 × 14.6 millimetres.
Average weight of shell:	0.14 gram.
Texture of shell:	not specially characterized.
Shape:	oblong or short ovoidal.
Nest:	consists of vegetable materials, lined with horsehair.
Site of nest:	by preference in shrubs and hedges.
Number of eggs:	5—6.
Breeding season:	May—July.
Duration of incubation:	about 13 days.

---

[1]) See also for this species the general remarks respecting the Family.

Family SYLVIIDAE.

Sylvia simplex Latham.[1] — Garden-Warbler.

(Plate 54, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 40, No. 93).

Colour of surface of shell:	greyish-, yellowish- or greenish-white; brownish.
Colour of spots:	yellowish to dark brown; those lying deeper appear to be of an ash-grey colour.
Average dimensions:	20.1 × 14.8 millimetres.
Average weight of shell:	0.14 gram
Texture of shell:	not specially characterized.
Shape:	mostly oblong ovoidal.
Nest:	consists of vegetable materials, sometimes lined with horsehair.
Site of nest:	in various shrubs, at from ½ to 2 Metres from the ground.
Number of eggs:	5-6.
Breeding season:	May—July.
Duration of incubation:	about 13 days.

[1]) See also for this species the general remarks respecting the Family.

FAMILY SYLVIIDAE.

Phylloscopus sibilatrix (Bechstein). — Wood-Wren.

(Plate 55, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 38, No. 86).

Colour of surface of shell:	dull white; frequently faintly bluish.
Colour of spots:	dark yellowish or violet brown. The spots are often elongated in the direction of the length of the eggshell. *A good characteristic of the species consists in the circumstance that the pointed half of the eggshell is spotted equally thickly as the basal portion.*
Average dimensions:	15.8 × 12.4 millimetres.
Average weight of shell:	0.07 gram.
Texture of shell:	bears no special characteristic.
Shape:	mostly short oval.
Nest:	is built of vegetable materials, especially dry leaves, and is sometimes lined with hair. (It has its hole in the side).
Site of nest:	on the ground, by preference in beech and oak woods.
Number of eggs:	5—7.
Breeding season:	May—June.
Duration of incubation:	about 13 days.

Family SYLVIIDAE.

Phylloscopus trochilus (L.) — Willow-Wren.

(Plate 56, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 37, No. 85).

Colour of surface of shell:	creamy white, sometimes tinted slightly reddish.
Colour of spots:	light or dark rusty red. The markings mostly consist of fine pale rusty red cloudlets; sometimes, however, of larger dark rusty red spots. A type more rarely met with has a purer white ground colour and is sparingly spotted in a *darker* shade than usual; this type possesses more of the character of *collybita*-eggs.
Average dimensions:	15.3 × 11.8 millimetres.
Average weight of shell:	0.07 gram.
Texture of shell:	not specially characterized.
Shape:	ovoidal.
Nest:	consists of vegetable materials and material spun by insects, lined with down (of plants), hair and a profusion of feathers. (It is more or less domed, with a hole in the side in downward direction.
Site of nest:	as a rule on the ground, sometimes in a little hollow, under the shelter of tall grass, thick shrubs, etc.
Number of eggs:	5—7, sometimes 8 (after-set: 5—6).
Breeding season:	May—July.
Duration of incubation:	about 13 days.

Family SYLVIIDAE.

Phylloscopus collybita (Vieillot). — Chiffchaff.

(Plate 57, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 37, No. 84).

Colour of surface of shell:	pure white.
Colour of spots:	brownish red; purple brown.
Average dimensions:	15.45 × 12.1 millimetres.
Average weight of shell:	0.05 gram.
Texture of shell:	not specially characterized.
Shape:	ovoidal; sometimes short-compressed.
Nest:	consists of vegetable materials, lined with hair and feathers. (It is domed, with a hole in the side in upward direction).
Site of nest:	slightly above the ground in small shrubs, in the midst of dense vegetation; also higher from the ground, especially in thujas and cypresses.
Number of eggs:	6-7 (after-set: 5-6).
Breeding season:	May-July.
Duration of incubation:	about 13 days.

Family SYLVIIDAE.

Hypolais hypolais (L.) — Icterine Warbler.

(Plate 58, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 38, No. 88).

Colour of surface of shell:	rose-pink. My examination of eggshells proved that THIENEMANN'S statement, namely that of this species the shell is coloured rose-pink through and through to the inner membrane, is *incorrect.* The pigment impregnation only extends to the uppermost layer of carbonate of lime; below that the shell is *chalky white* thickly dotted with extremely fine red specks visible only to the aided eye.
Colour of spots:	dark brown. The spots are now and again surrounded by a faint *penumbra*, and are often accompanied by a few very fine veins.
Average dimensions:	18.47 × 13.4 millimetres.
Average weight of shell:	0.092 gram.
Texture of shell:	is distinguished from that of all other species of the Family by a much finer granulation.
Shape:	mostly oblong ovoidal.
Nest:	is built of vegetable materials, especially of much seed down, and material spun by insects, mostly covered on the outside with birch-bark and sometimes with feathers as well; lined with hair and in some instances with feathers.
Site of nest:	generally at about 3 Metres from the ground — sometimes lower, sometimes much higher — in bushes and in the lower branches of trees.
Number of eggs:	5—6.
Breeding season:	May—July.
Duration of incubation:	about 13 days.

Family SYLVIIDAE.

Calamodus aquatica (Gmelin.) [1] — Aquatic Warbler.

(Plate 59, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 40, No. 94).

Colour of surface of shell:	greyish green; greyish yellow; or greyish brown.
Colour of spots:	brownish grey; brown. The markings, which are of a cloudy nature, cover the ground colour completely.
Average dimensions:	16.9 × 12.7 millimetres.
Average weight of shell:	0.088 gram.
Texture of shell:	not specially characterized.
Shape:	ovoidal.
Nest:	is constructed of vegetable materials, especially of stems and blades of graminaceous plants, lined with wool (of plants), hair and a few feathers.
Site of nest:	not far from the ground in dense marsh vegetation between stems of cyperaceous, graminaceous and similar plants.
Number of eggs:	5—6.
Breeding season:	end of May—June.
Duration of incubation:	about 13 days.
Remarks:	It is said of *aquatica*-eggs that as a rule they are coloured *more greenish yellow* and usually lighter than those of *schoenobaenus*. Dr. REY asserts to have been unable to ascertain any constant oological distinguishing feature for the two species. My own investigation led to the same result. They frequently show a great resemblance to eggs of *Motacilla flava;* the site of the nest, however, excludes their being confounded with the latter.

---

[1]) See also for this species the general remarks respecting the Family.

Family SYLVIIDAE.

Calamodus schoenobaenus (L.) — Sedge-Warbler.

(Plate 60, fig. a-f).

(Snouckaert: Avifauna Neerlandica, p. 41, No. 95).

Colour of surface of shell:	dull greenish yellow; yellowish or brownish.
Colour of spots:	brownish grey; brown. The marking, which is of a cloudy nature, covers the ground colour completely.
Average dimensions:	18 × 13.6 millimetres.
Average weight of shell:	0.102 gram.
Texture of shell:	not specially characterized.
Shape:	ovoidal.
Nest:	is built of vegetable materials, lined with hair, feathers and down (of plants).
Site of nest:	in willow or alder bushes in the midst of dense marsh vegetation.
Number of eggs:	5—6 (mostly 6).
Breeding season:	June-July.
Duration of incubation:	about 13 days.
Remarks:	Among *schoenobaenus*-eggs many are found which show a great resemblance to those of *Motacilla flava;* the different sites of the nests of the two species, however, always form a good distinguishing feature.

Family SYLVIIDAE.

Acrocephalus arundinaceus (L.) — Great Reed-Warbler.

(Plate 61, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 41, N°. 96).

Colour of surface of shell:	light blue; bluish white; greenish; sometimes tinted brownish yellow.[1])
Colour of spots:	dark brown; when lying deeper they appear to be of a greyish or olive brown colour.
Average dimensions:	22.45 × 16.15 millimetres.
Average weight of shell:	0.177 gram.
Texture of shell:	not specially characterized.
Shape:	usually oblong ovoidal.
Nest:	is built of vegetable materials, chiefly of stems and blades of graminaceous plants; the materials used for the lining sometimes also include horsehair and feathers.
Site of nest:	about 1 Metre from the water in dense reed vegetation, fixed to a few stems of that plant.
Number of eggs:	4—5, rarely 6.
Breeding season:	June—July.
Duration of incubation:	About 14 days.

---

[1]) See: Eggs of the Birds of Europe, by H. E. DRESSER (London, 1905-'11), Plate 10, fig. 44.

Family SYLVIIDAE.

Acrocephalus strepera (Vieillot). [1] — Reed-Warbler.

(Plate 62, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 41, No. 97).

Colour of surface of shell:	greyish white; greenish.
Colour of spots:	grey brown; greenish brown.
Average dimensions:	18.2 × 13.6 millimetres.
Average weight of shell:	0.09 gram.
Texture of shell:	not specially characterized.
Shape:	usually short-oval or rotund.
Nest:	is built of vegetable materials, chiefly of stems and blades of graminaceous plants, and lined with the softer parts of such plants and sometimes also with horsehair.
Site of nest:	above or close to water between stems of reeds to a height of about 1 Metre; sometimes also in willow and other bushes to a height of 2 Metres from the ground.
Number of eggs:	4—5.
Breeding season:	June—July.
Duration of incubation:	about 13 days.

---

[1]) See also for this species the general remarks respecting the Family.

Family SYLVIIDAE.

Acrocephalus palustris (Bechstein) [1] — Marsh-Warbler.

(Plate 63, fig. a—e).

(Snouckaert: Avifauna Neerlandica, p. 41, No. 98).

Colour of surface of shell:	bluish white.
Colour of spots:	olive brown; brownish grey; when lying deeper they appear to be of an ash-grey or violet grey colour. *Characteristic* of the species are the *light grey, extremely small* specks which are very thickly spread all over the eggshell, and the prominent large grey spots.
Average dimensions:	19.1 × 13.9 millimetres.
Average weight of shell:	0.1 gram.
Texture of shell:	not specially characterized.
Shape:	oblong ovoidal.
Nest:	is composed of vegetable materials; is sometimes lined with hair.
Site of nest:	not far from the ground, by preference in willow and stinging-nettle bushes in the midst of tall grass or reeds, sometimes at a distance from water on arable land.
Number of eggs:	4—5.
Breeding season:	June.
Duration of incubation:	about 13 days.

---

[1]) See also for this species the general remarks respecting the Family.

Family SYLVIIDAE.

Locustella naevia (Boddaert) — Grasshopper-Warbler.

(Plate 64, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 42, No. 99).

Colour of surface of shell:	white, tinged with very soft pink.
Colour of spots:	reddish brown; at the thicker end deeper-lying spots of a violet-grey appearance sometimes occur.
Average dimensions:	17.1 × 13.3 millimetres.
Average weight of shell:	0.095 gram.
Texture of shell:	the granulation is of a different nature to that of the other genera of the Family.
Shape:	oval.
Nest:	consists largely of broad blades of graminaceous plants; horsehair is sometimes found in the lining.
Site of nest:	on or immediately above the ground in grassy places where there are many shrubs, willowbushes, etc.; sometimes in clover and grain fields.
Number of eggs:	5—6.
Breeding season:	end of May-end of June.
Duration of incubation:	about 13 days.

Family SYLVIIDAE.

Locustella luscinioides (Savi)[1] — Savi's Warbler.

(Plate 65, fig. a-f).

(Snouckaert: Avifauna Neerlandica, p. 42, No. 100).

Colour of surface of shell:	lime-white. Owing to the thickness of the cloudy markings the ground colour is often almost entirely invisible.
Colour of spots:	greyish brown; reddish brown; those lying deeper are of a greyish violet.
Average dimensions:	19.72 × 14.59 millimetres.
Average weight of shell:	0.112 gram
Texture of shell:	the granulation is of a different nature to that of the other genera of the Family.
Shape:	mostly short-oval, as a rule slightly broader than those of *naevia*.
Nest:	consists wholly of broad blades of graminaceous plants (especially of *Phragmites communis* or *Glyceria*-species).
Site of nest:	preferably in the midst of extensive luxuriant bog vegetation, on the ground on crushed reeds or in dense tufts of *Gramineae* or *Juncaceae*.
Number of eggs:	5-6 (usually 5).
Breeding season:	end of May—end of June.
Duration of incubation:	about 13 days.
Remark:	*Luscinioides*-eggs show much resemblance to thickly, brownish marked eggs of *Motacilla alba* and *Lullula arborea*.

---

[1]) See also for this species the general remarks respecting the Family.

XVI. Family TURDIDAE.

XVII. Family MUSCICAPIDAE.

Fam. SYLVIIDAE.



a



b



c



d

Sylvia sylvia (L.)

Fam. SYLVIIDAE.



e



f



g



h

Sylvia sylvia (L.)

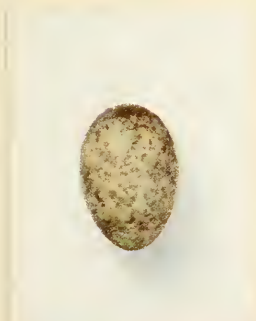
Fam. SYLVIIDAE.



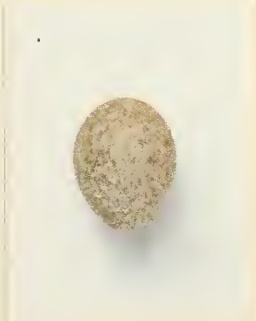
i



j



k



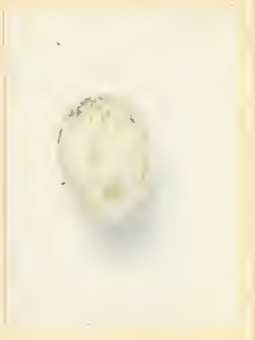
l

Sylvia sylvia (L.)

Fam. SYLVIIDAE.



a



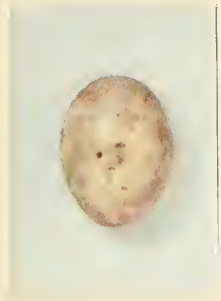
b



c

Sylvia curruca (L.)

Fam. SYLVIIDAE.



a



b



c



d

Sylvia atricapilla (L.)

Fam. SYLVIIDAE.



a



b



c



d

Sylvia simplex Latham.

Fam. SYLVIIDAE.



a



b



c

Phylloscopus sibilatrix (Bechstein).

Fam. SYLVIIDAE.



a



b



c



d

Phylloscopus trochilus (L.)

Fam. SYLVIIDAE.



a



b



c

Phylloscopus collybita (Vieillot).

Fam. SYLVIIDAE.



a



b



c

Hypolais hypolais (L.)

Fam. SYLVIIDAE.



a



b



c

Calamodus aquatica (Gmelin).

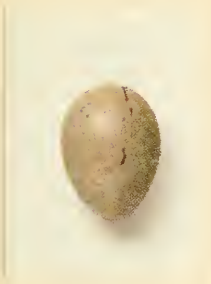
Fam. SYLVIIDAE.



a



b



c



d



e



f

Calamodus schoenobaenus (L.)

Fam. SYLVIIDAE.



a



b



c

Acrocephalus arundinaceus (L.)

Fam. SYLVIIDAE.



a



b



c

Acrocephalus strepera (Vieillot).

Fam. SYLVIIDAE.



a



b



c



d



e

Acrocephalus palustris (Bechstein).

Fam. SYLVIIDAE.



a



b



c

Locustella naevia (Boddaert).

Fam. SYLVIIDAE.



a



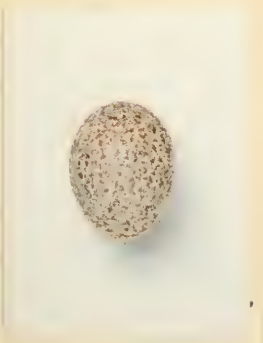
b



c



d



e



f

Locustella luscinioides (Savi.)

Families TURDIDAE and MUSCICAPIDAE.

(Plates 66—81).

My comparative examination of eggshells in the case of the above named Families gave me matter for the following notes.

I.

Counting from the exterior of the eggshell, the following layers are also distinguishable in these eggshells: —

1. GLUTINOUS LAYER.

Occurs in the eggshells of all the species. This layer which gives to the shell the so-called *gloss,* differing strongly qualitatively in the various species, exercises by its more or less yellowish colour a considerable influence on the tint of the underlying pigment, which is clearly perceptible especially in the case of plain eggs *(phoenicurus* and similar ones) after the removal, locally, of the layer.

2. OUTSIDE LIME LAYER.

Pigmented in the case of all the species — *titys* alone excepted. This layer gives the so-called ground colour to the eggshell, and on it the spots of the spotted species mainly occur. If it is absent

in the case of eggs of which the layer referred to under 3 is coloured blue or bluish green owing to the presence of oocyan, such eggs are called *cyanic;* if only the pigment is absent *(titys*, of course, remains out of consideration in this regard, being normally non-pigmented) the eggs are called *leucitic.* In the case of the latter eggs oocyan is also absent from the fundamental layer (mentioned under 3).

Of *S. oenanthe*-and *M. atricapilla*-eggs the outside layer is not distinguished by a pigment of its own from the fundamental layer (mentioned below sub 3), but the whole lime shell is coloured greenish blue through oocyan.

3. INNERMOST OR FUNDAMENTAL LIME LAYER.

Coloured greenish blue through oocyan in the case of all the species — with the exception only of *Ph. titys* and *E. rubecula* (in both of which *traces* sometimes occur!).

In the case of the Family *Turdus* — with the exception of *musicus* — it shows a few faint rust coloured speckles or little spots; in that of *viscivorus*, on the other hand, it is closely marked with more numerous, and also larger, spots; in that of *Aëd. luscinia, C. s. Cyanecula, E. rubecula* and *M. grisola* it is strewn with very fine rusty red specks and little spots, and in that of *Pr. rubetra* and *rubicola* with little yellowish spots; sometimes this pigmentation is scarcely visible with the unaided eye.

II.

In the oological group formed by *merula, torquatus, pilaris* and other species [1]), two types of markings are mainly distinguishable, viz: —

[1]) *T. iliacus L.,* which I do not regard as belonging to the birds breeding in the Netherlands, also belongs to this group.

1. a more or less cloudy marking spread uniformly over the whole surface of the shell, only faintly visible against the ground colour;

2. clearly pronounced spots of varying size, sharply separated from one another.

Viscivorus and *musicus* stand towards the *merula*-group as individually well specialised species, possessing only a few more or less convergent aberrations in common with that group (e. g., eggs that are plain or marked with a single spot, and frequently cyanic).

In the case of *E. rubecula*- and *M. grisola*-eggs, the two above indicated types of the *merula*-group, respectively, are found as the most commonly occurring marking.

The two principal types of the *cyanecula*-egg unite this species oologically on the one side with *Aëd. luscinia*, on the other with *Pr. rubicola*.

The shells of *rubetra*-eggs, when compared, e. g., with those of *rubicola*, distinguish themselves by a more massive nature and a stronger gloss, and in both respects most resemble eggs of *luscinia*.

Ph. phoenicurus, titys (with weak cyanic transitions towards *phoenicurus)*, *S. oenanthe* (with white aberrations), and *M. atricapilla* (deviating from *grisola* also in manner of nesting) are oologically characterized by a common softness of the eggshell peculiar to them. *Accentor modularis* [1]), which several authors class with the *Turdidae*, may also be included in this oological group.

TURDUS MERULA L.

Dr. Thienemann [2]), speaking of the ground colour, says, among other matters: — „Die lebhaftesten habe ich aus Holland und

[1]) See XIV. Family.

[2]) l. c. page 280, 2nd note.

„Dalmatien erhalten, wo Kalk und Salz gemeinsam zur Farben-„steigerung wirken."

The aberration (*Oates* speaks, less correctly, in respect of such eggs as of „variety") with a white ground colour (of which one is depicted in fig. 1 on page 8 of Vol. IV of the Catalogue of Birds' Eggs in the British Museum) in which thus, the green or bluish green pigment is wholly absent from layer 2 (see above), is rarely found among the *Turdinae*. Fig. 7 on the same page depicts an aberrant egg, in layer 2 of which a yellowish pigment takes the place of the green, and which is so closely spotted in a darker shade of the said ground colour as to give the impression of being coloured almost *plain liver brown*.

The occasional occurrence of unspotted eggs — a circumstance which in the case of normally spotted eggs does not, generally speaking, deserve being specially mentioned — and particularly of *leucitic* eggs, might in the case of *merula*, assuming that this species originally bred in caves, be an *atavic* phenomenon; in which connection I subjoin what is said relative to the site of the nest of this species in the „Katalog der Schweizerischen Vögel" [1]), namely: — „Die alten Ornithologen sowohl als die Vogelsteller sprechen vom „Nisten der Amseln in Felsspalten und in hohlen Bäumen. Diese „Tatsache wurde vielfach übersehen und wenn die Amsel beim Nisten „auf Dachbalken oder unter einem Fenstergesimse, auf einem für „Fliegenschnäpper bestimmten Brettchen beobachtet wurde, flugs „daraus ein neues Faktum der sich zum Höhlenbewohner umwan-„delnden Amsel konstruiert. Die Berichte unserer Mitarbeiter und „der älteren Literatur beweisen, dass die Amsel früher eher mehr „als heute Höhlen — oder besser gesagt Halbhöhlenbrüterin war".

---

[1]) Lief. VII—VIII (1911), page 1078.

TURDUS VISCIVORUS L.

DRESSER [1]) depicts an egg with a decided *green* ground colour.

On KRAUSE'S [2]) plate of this species (from left to right: 2nd row, fig. 5) an egg is shown which likewise has a pronounced *green* colour and which is spotted in the character of *musicus*.

TURDUS MUSICUS L.

As a rare aberration I here mention eggs with a *pure white* ground colour, spotted rusty brown. The drawings of these eggs [3]) remind me of eggs of *E. rubecula* in which the yellowish pigment is absent from the exterior lime layer.

ERITHACUS RUBECULA (L.).

That which constitutes an exception in respect of *our rubecula*-form namely the fact that the fundamental shell layer contains *oocyan* and that the so-called ground colour is thereby tinted bluish, is mentioned [4]) as being a rule for those of *E. superbus König*, occurring in Teneriffe and Gran-Canaria. The eggs of *E. akahige (Temm)* of Japan are of a plain dull blue colour [5]).

The occasional occurrence of *plain white sets of eggs* in the case

---

[1]) l. c. plate 1, fig. 4.

[2]) Oologia universalis palaearctica.

[3]) Wolley, l. c. part II, p. 288, nos. 1291 and 1296.
Yarrell, l. c. part I, p. 265.
Cat. Eggs—Brit. Mus., part. IV, p. 128; plate VIII, fig. 12.
Dresser, l. c. plate 3, fig. 4.

[4]) See: „Over eenige broedvogels der Canarische eilanden en van Madeira", by BARON R. SNOUCKAERT VAN SCHAUBURG, LL. D. (Yearbook of the Neth. Ornithological Association, No. 7, p. 28).

[5]) Cat. Eggs—Brit. Mus., IV, plate VII, fig. 1.

of this *cave-breeder* renders it, in my opinion, worth while that attention should remain fixed on the matter and relevant notes made.

CYANECULA SUECICA CYANECULA (WOLF).

DRESSER [1]) states that in his collection the eggs derived from Holland are the largest (dimensions 20 × 15 millimetres).

Fig. 15 of plate 5 in DRESSER'S work depicts a coffee brown egg which fully corresponds to one of the *luscinia*-types.

PHOENICURUS TITYS (L.).

OBERBECK [2]) rightly remarks that upon examining apparently unspotted eggs with a magnifying glass many (perhaps even most) are seen to bear a few fine rusty red specks which escape the unaided eye.

In the KLEINSCHMIDT collection [3]) there is a red-speckled set of eggs with a *yellowish* ground colour; SEEBOHM [4]) also mentions similar aberrations in respect of the ground colour. Up to the present I have never seen such aberrations. I consider them to be remarkable on account of their approach to certain eggs of *E. rubecula.*

It is of importance that attention should remain fixed on the *bluish* eggs which form transitions from the type of this species to that of *phoenicurus*, and to ascertain whether these continually recur in the case of particular female birds.

---

[1]) l. c. page 111.

[2]) See: „Zur Fleckenfarbe der Vogeleier" (Zeitschr. f. Ool. u. Ornith., XVIII, p. 169—185).

[3]) Naumann, l. c., I, p. 57.

[4]) Eggs of British Birds, p. 188.

PRATINCOLA RUBICOLA (L.).

DRESSER [1]) mentions an egg with a *yellowish white* ground colour (Collection: R. Chase, Birmingham), an aberration, thus, which like the one referred to above in respect of *titys* shows an approach to *rubecula*-eggs.

MUSCICAPA GRISOLA L.

The difference between the eggs of one set, mutually, is frequently very great in the case of this species. RASPAIL [2]), a French ornithologist, describes a deviating set consisting of five eggs which not only all differed in marking but particularly in ground colour from each other; the ground colour was greyish white, reddish white, bright bluish white, dirty white, and pale brown, respectively.

Fig. 9 of plate 125 in DR. REY'S work, showing an egg of which the so-called cap has been deposited in an entirely abnormal manner as regards its position, is described, in my opinion incorrectly, as a „variety".

---

[1]) l. c. page 98.

[2]) See: „Mémoires de la Société Zoologique de France", tome V (1892) page 186.

Family TURDIDAE.

Turdus merula L. — Blackbird.

(Plate 66, fig. a-e).

(Snouckaert: Avifauna Neerlandica, p. 43, No. 102).

Colour of surface of shell:	bluish green in various shades; yellowish grey.
Colour of spots:	rusty red; yellowish brown.
Average dimensions:	29.3 × 21.4 millimetres.
Average weight of shell:	0.4 gram.
Texture of shell:	not specially characterized.
Shape:	varies considerably.
Nest:	consists of vegetable material and frequently of some cow dung, intermixed as a rule with mud or damp earth; lined with plant fibres and hair.
Site of nest:	at greatly varying heights in trees, shrubs, etc.; also on and even in the ground; in holes in trees, on wooden clamps, and in similar places.
Number of eggs:	5—6 (after-set: 4—5).
Breeding season:	end of March — beginning of July.
Duration of incubation:	about 15 days.

Family TURDIDAE.

Turdus torquatus L. — Ring-Ouzel.

(Plate 67, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 43, No. 103).

Colour of surface of shell:	mostly bright bluish green; sometimes yellowish grey.
Colour of spots:	reddish brown.
Average dimensions:	30.4 × 21.6 millimetres.
Average weight of shell:	0.41 gram.
Texture of shell:	not specially characterized.
Shape:	usually slender ovoidal.
Nest:	consists of vegetable material intermixed with earth, lined with parts of plants.
Site of nest:	in trees, shrubs or on the ground.
Number of eggs:	4—5.
Breeding season:	May-June.
Duration of incubation:	about 15 days.
Remark:	as a rule *torquatus*-eggs are marked in a more pronounced manner than those of *merula* and *pilaris*.

Family TURDIDAE.

Turdus viscivorus L. — Mistle-Thrush.

(Plate 68, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 44, No. 105).

Colour of surface of shell:	yellowish-, greenish- or bluish grey; brownish.
Colour of spots:	reddish brown; the larger, darker coloured spots are frequently surrounded by a *penumbra*, and thereby acquire the character of blotches with blurred edges.
Average dimensions:	30.5 × 22 millimetres.
Average weight of shell:	0.43 gram.
Texture of shell:	not specially characterized.
Shape:	ovoidal.
Nest:	consists of vegetable material and, sometimes, of wool, intermixed with earth.
Site of nest:	in various trees, especially by preference in coniferous trees; also in shrubs; mostly at a considerable height, but are also found at a short distance from the ground.
Number of eggs:	4-5 (after-set: 3-4).
Breeding season:	April-July.
Duration of incubation:	about 16 days.

Family TURDIDAE.

Turdus musicus L. — Song-Thrush.

(Plate 69, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 44, No. 106). [1])

Colour of surface of shell:	bright bluish green.
Colour of spots:	dark purple brown; violet black; spots lying deeper appear to be lilac coloured; in the case of eggs marked with larger spots the colour is never so intense as of eggs which only show smaller spots or speckles.
Average dimensions:	27.6 × 20.4 millimetres.
Average weight of shell:	0.33 gram.
Texture of shell:	not specially characterized.
Shape:	as a rule short ovoidal; often rotund.
Nest:	consists of vegetable material; lined as a rule with dust of decayed wood mixed with saliva.
Site of nest:	in trees, especially in coniferous trees, close to the trunk; in thorn and other bushes; in hedges; in climbing plants against walls and trees; at various heights, sometimes immediately above or on the ground.
Number of eggs:	5-6 (after-set: 4).
Breeding season:	April—July.
Duration of incubation:	about 16 days.

---

[1]) Baron R. SNOUCKAERT VAN SCHAUBURG, LL.D., was so kind as to inform me that the investigation instituted by him in consequence of the separation made by HARTERT of the English Song-Thrush-form under the name of *clarkei*, which only became known after the publication of the former's „Avifauna Neerlandica", had shown that this form is also *breeding* in this country, so that in the said „Avifauna" (p. 44): „106. *Turdus musicus musicus L.*" should be struck out and replaced by:

106. *Turdus philomelos clarkei Hart.* Breeding.

106*a*. *Turdus philomelos philomelos Brehm.* Migrating.

Family TURDIDAE.

Turdus pilaris L. — Fieldfare.

(Plate 70, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 45, No. 107).

Colour of surface of shell:	green, in various shades; sometimes yellowish grey.
Colour of spots:	rusty red; yellowish brown; as a rule the spots are more sharply defined and coarser than *merula*-eggs, while small dark brown veins occur on the basal part more frequently than on eggs of the last named species.
Average dimensions:	28.8 × 20.8 millimetres.
Average weight of shell:	0.36 gram.
Texture of shell:	not specially characterized.
Shape:	frequently short oval, but on the whole varying strongly in shape.
Nest:	consists of vegetable material, mostly thickly intermixed with earth.
Site of nest:	in all sorts of leaf and coniferous trees.
Number of eggs:	5—6.
Breeding season:	May—June.
Duration of incubation:	about 16 days.

Family TURDIDAE.

Aëdon luscinia (L.) — Nightingale.

(Plate 71-72 fig. a-h).

(Snouckaert: Avifauna Neerlandica, p. 46. No. 112).

Colour of surface of shell:	olive brown; yellowish brown; olive green; greyish green in various shades.
Colour of spots:	of most eggs the whole surface is faintly clouded in a rusty red tint (such as, e.g., that of the *merula*-spots). This is most clearly noticeable in the eggs in shades of green. At the thicker end this cloudy marking is sometimes so close as to form a cap or ring.
Average dimensions:	21 × 15.6 millimetres.
Average weight of shell:	0.165 gram.
Texture of shell:	not specially characterized.
Shape:	short or oblong ovoidal; often rotund.
Nest:	consists of vegetable material; the fundamental part more especially of dry leaves; the lining sometimes contains horsehair also.
Site of nest:	usually a short distance from, often immediately on the ground; also up to a height of about ½ Metre [1]; by preference in the midst of dense vegetation [2] with shrubs of a middling height — especially in oak brushwood — where there are many dry leaves.
Number of eggs:	4—6, usually 5.
Breeding season:	May—June.
Duration of incubation:	about 14 days.

---

[1]) Mr. P. TESCH states in „De Levende Natuur" (XI, p. 214) that on a few occasions he found a *luscinia*-nest a metre from the ground in a wood stack.

Mr. J. L. F. DE MEYERE found one at about 2½ Metres height in a coniferous tree.

[2]) Mr. WOLDA of Wageningen noted that almost without an exception *stinging nettles* grow in the immediate surrounding of the nest.

Family TURDIDAE.

Erithacus rubecula (L.) — Redbreast.

(Plate 73, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 47, No. 113).

Colour of surface of shell:	cream coloured; white, in more or less pure tints; rarely greenish.
Colour of spots:	reddish brown.
Average dimensions:	19.4 × 14.7 millimetres.
Average weight of shell:	0.137 gram.
Texture of shell:	not specially characterized.
Shape:	short ovoidal; frequently rotund.
Nest:	consists of vegetable material; the lining also contains hair and sometimes feathers.
Site of nest:	a short distance from the ground, in decayed tree stumps; between roots; in climbing plants, in cracks in walls, in holes in the ground, etc.
Number of eggs:	5-7 (sometimes 8), mostly 6.
Breeding season:	May—July.
Duration of incubation:	about 14 days.

Family TURDIDAE.

Cyanecula suecica cyanecula (Wolf) — Bluethroat.

(Plate 74, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 47, N°. 115).

Colour of surface of shell:	dull bluish green; greyish green; greenish brown, greyish yellow.
Colour of spots:	reddish brown; the marking is of a very fine, frequently close, cloudy nature; it sometimes consists of a typical *Turdus*-marking [1]) and varies in two directions, namely in those of the character of *Aëd. luscinia,* and of *Pr. rubicola.*
Average dimensions:	19 × 14 millimetres.
Average weight of shell:	0.1 gram.
Texture of shell:	not specially characterized.
Shape:	varying between short compact and more or less oblong.
Nest:	consists of vegetable material; the substructure more particularly of dry leaves; the lining also contains hair.
Site of nest:	near water and by preference in the vicinity of cultivated fields, between tall brushwood and under the shelter of a luxuriant vegetation, on or even in the ground, under a thick root or against a stump; it is also found in hollows washed out in steep banks of ditches.
Number of eggs:	5—6.
Breeding season:	May (sometimes end of April)—July.
Duration of incubation:	about 14 days.

---

[1]) The set from Valkenswaard to which *Oates* refers in the „Cat. Eggs—Brit. Mus." (part. IV, p. 144) bears this character.

Family TURDIDAE.

Phoenicurus phoenicurus (L.) — Redstart.

(Plate 75, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 48, No. 116).

Colour of surface of shell:	bluish green; sometimes marked with rusty red speckles or little spots, especially at the basal end. Many eggs in which this cannot be observed with the unaided eye, appear when examined with a magnifying glass to be marked with numerous fine specks.
Average dimensions:	18.65 × 13.8 millimetres.
Average weight of shell:	0.11 gram.
Texture of shell:	not specially characterized.
Shape:	short compact or more oblong.
Nest:	consists of vegetable material, lined with hair, wool and feathers.
Site of nest:	in holes in trees, especially in willows; in holes in walls; in wood stacks; also in or on the ground in dry leaves, etc.
Number of eggs:	6-7, sometimes 8.
Breeding season:	May-July.
Duration of incubation:	about 13 days.

FAMILY TURDIDAE.

Phoenicurus titys (L.) — Black Redstart.

(Plate 76, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 48, No. 107).

Colour of surface of shell:	pure white; sometimes tinted faintly bluish green; marked as an exception with a few rusty red speckles easily visible with the unaided eye; when examined with a magnifying glass many apparently unspotted eggs appear to be marked with similar, only very fine, specks.
Average dimensions:	19.4 × 14.4 millimetres.
Average weight of shell:	0.12 gram.
Texture of shell:	not specially characterized.
Shape:	mostly ovoidal.
Nest:	consists of vegetable material, lined with hair, wool and feathers.
Site of nest:	in holes in walls; inside houses on beams, in verandas, etc.
Number of eggs:	5—6, sometimes 7 (after-set: 4—5).
Breeding season:	May (sometimes end of April)—July.
Duration of incubation:	about 13 days.

Family TURDIDAE.

Saxicola oenanthe (L.) — Wheatear.

(Plate 77, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 48, No. 118).

Colour of surface of shell:	light greenish blue; sometimes only faintly tinted, to almost white; some eggs bear at the basis reddish brown or light rusty red speckles or little spots, sometimes thickened at the basis to a distinct ring.
Average dimensions:	21 × 16 millimetres.
Average weight of shell:	0.15 gram.
Texture of shell:	not specially characterized.
Shape:	oblong ovoidal, frequently slightly bellied.
Nest:	consists of vegetable material, lined with wool, hair and feathers.
Site of nest:	in stoneheaps, rabbit-holes, wood-stacks, steep waterbanks, under clods of earth, etc.
Number of eggs:	5—7, mostly 6.
Breeding season:	May (sometimes end of April)—July.
Duration of incubation:	about 13 days.

Family TURDIDAE.

Pratincola rubetra (L.) — Whinchat.

(Plate 78, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 49, No. 120).

Colour of surface of shell:	greenish blue; sometimes a pronounced blue.
Colour of spots:	almost without an exception the surface of the shell — more noticeable at the basal part — bears faint rusty red, cloudy speckles or little spots.
Average dimensions:	18.5 × 14 millimetres.
Average weight of shell:	0.125 gram.
Texture of shell:	not specially characterized.
Shape:	short compact.
Nest:	consists of vegetable material, lined with hair.
Site of nest:	on the ground, in thick grass, in a little hollow, and mostly under the shelter of a little shrub or tall plant.
Number of eggs:	5—6.
Breeding season:	May—June.
Duration of incubation:	about 13 days.

Family TURDIDAE.

Pratincola rubicola (L.) — Stonechat.

(Plate 79, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 49, No. 121).

Colour of surface of shell:	greenish blue, in a lighter tint than that of *rubetra*-eggs.
Colour of spots:	the whole surface of the shell is usually covered with little cloudy spots in a dull reddish brown or rusty yellow tint; or these spots form at the thicker end a distinct ring or closed cap.
Average dimensions:	18 × 14 millimetres.
Average weight of shell:	0.1 gram.
Texture of shell:	not specially characterized.
Shape:	mostly short compact.
Nest:	consists of vegetable material, lined with hair and feathers.
Site of nest:	on the ground, in grass, mostly in a little hollow, under or near a little shrub or a stone in the midst of luxuriant vegetation.
Number of eggs:	5—6.
Breeding season:	end of April—June.
Duration of incubation:	about 13 days.

Family MUSCICAPIDAE.

Muscicapa grisola L. — Spotted Flycatcher.

(Plate 80, fig. a-e).

(Snouckaert: Avifauna Neerlandica, p. 35, No. 80).

Colour of surface of shell:	light green, sometimes bluish; greenish, yellowish or reddish white.
Colour of spots:	brownish red; brick red; rusty yellow; when lying deeper they are of greyish violet appearance; the latter are especially visible in the case of eggs with a bluish ground colour.
Average dimensions:	18.47 × 13.65 millimetres.
Average weight of shell:	0.12 gram.
Texture of shell:	not specially characterized.
Shape:	short oval.
Nest:	consists of vegetable material, lined with hair, wool and feathers; varies in outward appearance according to its surroundings.
Site of nest:	on thick branches, close to the trunk; in the heads of pollard willows; in holes in trees and walls; in climbing plants against walls, and between the laths of espaliers; on beams in garden houses.
Number of eggs:	5—6 (after-set: 3—4).
Breeding season:	May—July.
Duration of incubation:	about 13 days.
Remarks:	The mutual difference in ground colour and marking of the eggs of one and the same set is frequently very great. (See the general remarks respecting this species).

Family MUSCICAPIDAE.

Muscicapa atricapilla L. — Pied Flycatcher.

(Plate 81, fig. a—b).

(Snouckaert: Avifauna Neerlandica, p. 35, N°. 81).

Colour of surface of shell:	pale greenish blue. Eggs bearing a few fine reddish brown specks [1]) are still to be regarded as highly rare.
Average dimensions:	17.4 × 13.4 millimetres.
Average weight of shell:	0.09 gram.
Texture of shell:	the granulation is much finer than that of *grisola*-eggs.
Shape:	short or oblong ovoidal.
Nest:	consists of vegetable materials, lined with hair, wool and feathers.
Site of nest:	in holes of trees.
Number of eggs:	5—8, usually 5—6.
Breeding season:	May—June.
Duration of incubation:	about 14 days.

---

[1]) See DRESSER, l.c. plate 15, fig. 7 and 8.

Fam. TURDIDAE.



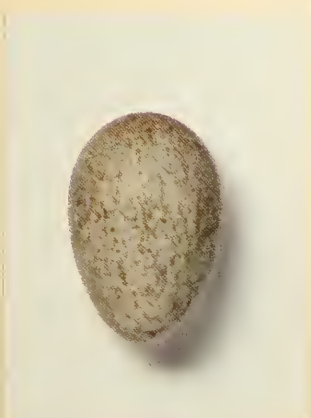
a



b



c



d



e

Turdus merula L.

Fam. TURDIDAE.



a



b



c



d

Turdus torquatus L.

Fam. TURDIDAE.



a



b



c



d

Turdus viscivorus L.

Fam. TURDIDAE.



a



b



c

Turdus musicus L.

Fam. TURDIDAE.



a



b



c



d

Turdus pilaris L.

Fam. TURDIDAE.



a



b



c



d

Aëdon luscinia (L.)

Fam. TURDIDAE.



e



f



g



h

Aëdon luscinia (L.)

Fam. TURDIDAE.



a



b



c

Erithacus rubecula (L.)

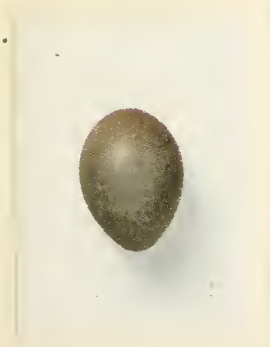
Fam. TURDIDAE.



a



b



c



d

Cyanecula suecica cyanecula (Wolf).

Fam. TURDIDAE.



a



b



c

Phoenicurus phoenicurus (L.)

Fam. TURDIDAE.



a



b



c



d

Phoenicurus titys (L.)

Fam. TURDIDAE.



a



b



c



d

Saxicola oenanthe (L.)

Fam. TURDIDAE.



a



b



c

Pratincola rubetra (L.)

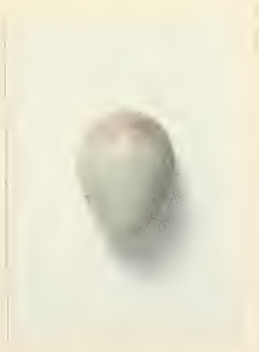
Fam. TURDIDAE.



a



b



c

Pratincola rubicola (L.)

Fam. MUSCICAPIDAE.



a



b



c



d



e

Muscicapa grisola L.

Fam. MUSCICAPIDAE.



a



b

Muscicapa atricapilla L.

XVIII. Family HIRUNDINIDAE.

Family HIRUNDINIDAE.

Hirundo rustica L. — Swallow.

(Plate 82, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 52, No. 126).

Colour of surface of shell:	dull white.
Colour of spots:	rusty brown; as an exception: red, or very dark brown; when lying deeper they appear to be of a grey or violet grey colour.
Average dimensions:	19.4 × 13.4 millimetres.
Average weight of shell:	0.103 gram.
Texture of shell:	not specially characterized.
Shape:	mostly oblong ovoidal.
Nest:	is built of muddy earth, mixed with viscous saliva, and intermixed and lined with little bits of straw, hair, and feathers.
Site of nest:	indoors: in barns, stables, etc., as well as outdoors: under gutters, penthouses and in such like places; also under bridges.
Number of eggs:	5—6 (after-set: 3—4).
Breeding season:	about the middle of May—beginning of August.
Duration of incubation:	about 14 days.

Fam. HIRUNDINIDAE.



a



b



c

Hirundo rustica L.

Family HIRUNDINIDAE.

Delichon urbica (L.) — Martin.

(Plate 83, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 53, No. 127).

Colour of surface of shell:	white, with a weak gloss.
Colour of spots:	see the subjoined remarks *.
Average dimensions:	18.3 × 13.2 millimetres.
Average weight of shell:	0.104 gram.
Texture of shell:	bears no special characteristic; I cannot support *Bau's* assertion that faint longitudinal grooves often occur at the pointed end of the egg.
Shape:	oblong ovoidal, pointed.
Nest:	is built of clay, or muddy earth, mixed with viscous saliva, and lined with feathers and little bits of straw; the entrance is made on one side.
Site of nest:	against the exterior of buildings, under eaves, gutters, etc.; also under bridges, and in similar places; often in colonies.
Number of eggs:	5 (after-set: 4).
Breeding season:	end of May—August (sometimes even in September).
Duration of incubation:	about 13 days.
*** Remarks:**	On some eggs specks occur of a darker colour than the spots of *rustica*-eggs; in most of these cases these specks are undoubtedly formed by excrements of nest parasites, and not by pigment. Nevertheless, eggs really speckled with pigment appear to occur occasionally [1]) and older writings already mention such eggs (KLEIN, BECHSTEIN, THIENEMANN). W. SCHUSTER considers that *urbica*-eggs are in a transitionary stage towards a spotted type, and states that in his birthplace (situated in Oberhessen) most eggs are dotted over with distinct dark brown specks. According to HAGENDEFELDT this is also the case in Sylt [2]). In 1907 a set of eggs was found near Newbury (South England, Berkshire) which is described as „marked with small red spots".

[1]) The description of the eggs in SCHLEGEL (Nat. Hist. v. Nederland, De Vogels, 1868, p. 46) to the effect that they are always speckled over with brown and red, is of course founded on an error.
[2]) Journal f. Ornithologie, 51 (1903), p. 23.

Fam. HIRUNDINIDAE.



a



b



c

Delichon urbica (L.)

Family HIRUNDINIDAE.

Riparia riparia (L.) — Sand-Martin.

(Plate 84, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 53, No. 128).

Colour of surface of shell:	white, less glossy than *urbica*-eggs.
Average dimensions:	17.2 × 12.4 millimetres.
Average weight of shell:	0.074 gram.
Texture of shell:	the granulation is considerably finer than that of *urbica*-eggs; the difference is visible with the unaided eye.
Shape:	oblong ovoidal, usually still more pointed than *urbica*-eggs.
Nest:	consists of vegetable materials, lined with feathers.
Site of nest:	in burrows of from about 50 centimetres to about 2 Metres depth, excavated by the birds themselves in sandy banks, sand pits, earthen embankments, etc. (in colonies).
Number of eggs:	5, sometimes 6.
Breeding season:	end of May-middle of July.
Duration of incubation:	13 days.

Fam. HIRUNDINIDAE.



a



b



c

Riparia riparia (L.)

XIX. Family: PICIDAE.

Family PICIDAE.

(Plates 85—88).

The eggs of all the genera of this Family have an enamelled appearance; among the *Picinae*, breeding in this country, this is especially the case with *Gecinus viridis*.

Picinae-eggs are furthermore frequently characterized — especially at the pointed end — by furcated longitudinal grooves; these occur more particularly in the case of eggs of *Drendrocopus major*.

In texture the genera *Gecinus* and *Dendrocopus* only differ in so far that of the latter it is slightly finer.

Where NOZEMAN [1]), in the case of *G. viridis*, speaks of „faintly clouded" eggs, and in that of *D. major* of „faintly speckled" eggs, this undoubtedly indicates as regards the former species, nothing else but accessory spots and marks caused by humus acids, etc. in the breeding holes; as regards the latter, excrements of nest parasites.

In respect of HARDY'S [2]) statement that a *green* coloured set of eggs of *Gecinus viridis* together with the female bird were once

---

[1]) NOZEMAN, HOUTTUYN EN SEPP, Nederlandsche Vogelen, I, pages 43 and 41.
[2]) See YARRELL, l.c., vol. II, p. 259, 2nd note.

brought to him, I consider the view that this is manifestly an instance of confusion with eggs of *Sturnus vulgaris*, containing very little oocyan, to be open to doubt and not least of all on account of his authority; for it is by no means excluded that in the case of *Picidae*-eggs a green discoloration of the shell may be caused, for instance by *fungi*.

The texture of the shell [1]) of the genus *Jynx* is very closely allied to that of the *Picinae*, so that *torquilla*-eggs are difficult to distinguish from eggs of equal size of *D. minor;* the granulation may be said to be rather *closer* whilst the eggs, as regards shape, are usually more oblong, and further, slightly less glossy than *minor*-eggs.

---

[1]) The difference in texture of *minor*- and *torquilla*-eggs is most clearly visible when pure prepared eggs are filled with water that has been coloured crimson by means of carmine-cinnabar.

Family PICIDAE.

Gecinus viridis (L.) — Green Woodpecker.

(Plate 85, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 54, No. 131).

Colour of surface of shell:	glossy white.
Average dimensions:	31 × 23 millimetres.
Average weight of shell:	0.6 gram.
Texture of shell:	see the general review of the Family.
Shape:	usually ovoidal, strongly blunted at the basal end.
Nest:	a few chips serve as a layer on which the eggs lie.
Site of nest:	in holes of trees; mostly in those of foliage trees.
Number of eggs:	6—7.
Breeding season:	May—June.
Duration of incubation:	about 17 days.

Family PICIDAE.

Dendrocopus major (L.) — Great Spotted Woodpecker.

(Plate 86, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 55, No. 132).

Colour of surface of shell:	glossy white.
Average dimensions:	26.4 × 19.6 millimetres.
Average weight of shell:	0.4 gram.
Texture of shell:	see the general review of the Family.
Shape:	usually short oval, with a blunt point.
Nest:	fine chips serve as a layer on which the eggs lie.
Site of nest:	in holes of trees, by preference in those of softer kinds of wood.
Number of eggs:	5-6, sometimes 7.
Breeding season:	May—beginning of June.
Duration of incubation:	about 15 days.

Family PICIDAE.

Jynx torquilla (L.) — Wryneck.

(Plate 88, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 57, No. 136).

Colour of surface of shell:	glossy white.
Average dimensions:	20.3 × 15.4 millimetres.
Average weight of shell:	0.21 gram.
Texture of shell:	see the general review of the Family.
Shape:	short oval.
Nest:	the eggs lie immediately on the bare lower surface of the hole; if there is a layer of moss, wool, etc., it is most decidedly a part of an old nest of some other species of bird, and *torquilla* has been unable to remove it; it is not until there are young birds that all kinds of sharp objects, such as bits of glass and shells, etc. are put into the hole. [1])
Site of nest:	in existing holes of trees.
Number of eggs:	7—12, usually 9.
Breeding season:	June—beginning of July.
Duration of incubation:	about 14 days.

---

[1]) See for further nidological and other particulars the very important article by Mr. J. L. F. DE MEYERE, in the „Jaarboekje der Nederlandsche Ornithologische Vereeniging", No. 7, p. 62, etc.

Fam. PICIDAE.



a



b



c

Gecinus viridis (L.)

Fam. PICIDAE.



a



b



c



d

Dendrocopus major (L.)

Fam. PICIDAE.



a



b



c



d

Dendrocopus minor (L.)

Fam. PICIDAE.



a



b



c

Jynx torquilla (L.)

XX. Family CUCULIDAE.

The egg of CUCULUS CANORUS L.

(Plates 89—90).

In most instances it is possible to distinguish in the markings:

a. the undermost, grey or violet grey spots, fainter or clearer in shade according to the greater or smaller depth at which they are situated; they are found principally at the basal part of the shell.

b. the middle, mostly irregularly shaped spots (coloured intensively and scarcely ever closed, but mostly disintegrated), small clouds, spatters and specks of various sizes, which, although spread all over the shell, usually occur slightly more densely on the basal half; they, however, only rarely form a real ring there; the colour of the spots, etc. varies; a light or dark shade of brown occurs most frequently, with which, however, other tints are also sometimes mixed.

c. the uppermost, fine round specks, or small irregularly shaped spots, dark in colour and sharply accentuated. They are only rarely completely absent; the greater their number is, the finer they are; their colour is blackish brown or black; in the case of the reddish types they are coloured reddish, especially at the edges; they are conglutinated so little that they soon come off when moistened.

The colour of the markings is frequently in harmony with the ground colour, i. e. it consists of a shade of the latter, on which is based in the case of many of our *canorus*-eggs the great resemblance of the character of the markings to that of the eggs of *Motacilla flava*.

With the exception of the bluish green *phoenicurus*-type, my investigations showed me that the fundamental layer of lime of *canorus*-eggs is pure white, and that the more or less greenish tint which many eggs show when light passes through them is therefore not caused by oocyan present in that layer, but that its origin must be sought for in the pigment of the superimposed groundcolour-layer.

To the aided eye the texture of the shell of *canorus*-eggs is characterized by the fact that each of the closely united particles of lime is clearly perceptible by itself.

As regards the pores, it would appear to me that there are two types, viz. one type in which the pores are clearly perceptible, and another in which they are not conspicuous at all.

The following distinctive qualities are characteristic of *canorus*-eggs:

1. the spots, etc. described above sub *b*.
2. the specks referred to under *c*.
3. the firmness of the shell (distinctly noticeable during preparation).
4. the comparatively great weight of the shell.
5. the peculiar texture of the shell.
6. the tolerably constant shape wich shows a distinct flattening near the point where the greatest longitudinal diameter and the

Fam. CUCULIDAE.



a



b



c



d



e



f

Cuculus canorus L.

Fam. CUCULIDAE.



g



h



i



j



k



l

Cuculus canorus L.

greatest latitudinal diameter intersect one another, which point is always nearer the thicker end, whilst the curve at the pointed end is not so round as is the case with most *Oscines*-eggs.

When determining, attention should be paid especially to the characteristics enumerated under 2, 3, and 4.

LINK [1]) gives the following explanation of the phenomenon that the weight of the *canorus*-eggshell is so great in proportion to its comparatively small size and its thinness: „When the shell is being „formed the particles of lime adhere together during the process of „settling and crystallization more compactly than in other eggs; a „natural result of this circumstance is the marked firmness and the „great specific weight of the *canorus*-eggshell, without this shell „being positively thick".

LINK is not the first to express himself in this sense. Nine years previously CAPEK [2]) who, strange to say, is not quoted at all by LINK, wrote: „Die Festigkeit der Schale ist ein sehr wichtiges „Criterium der Kuckuckseier; ihre Ursache haben wir in der com- „pacten Masse der Schale zu suchen. Gewiss ist der Umstand dass „Kuckuckseier ursprünglich naturgemäss grösser waren, die eigent- „licke Ursache dieser merkwürdigen Textur der Schale; die Eier „verkleinerten sich, aber das Quantum der Kalkmasse ist verhältnis- „mässig gross geblieben, wodurch die Schale compacter wurde."

As regards the number of eggs which one *canorus*-female bird lays in a season, LINK [3]) has, as a result of his many years of

---

[1]) Verhandl. d. Ornith. Ges. in Bayern, VI (1905). München, 1906.
[2]) Ornith. Jahrbuch, VII. Hallein, 1896.
[3]) l. c., IV (1903).

observations, come to the conclusion that the period in which eggs are laid may be estimated at about 48 days, during which an egg is laid every six days, and every female bird therefore produces 8 eggs at the most in one season. The high number of 20 in one season, which Dr. REY [1]) assumes to be the case, is, in LINK's opinion, founded on an error: „Der Irrtum des Dr. REY erkläre sich „dadurch" — LINK writes — „dass er die Eier von mehreren Weib„chen für die von einem einzigen Weibchen gelegten halte. In jeder „Gegend, namentlich in denen, wo viele Kuckucke vorhanden wären, „finde man Weibchen, die alle ganz gleiche Eier legten, so dass „man die Eier der verschiedenen Weibchen nicht unterscheiden „könne." The words „ganz gleiche" should of course be taken cum grano salis; namely in the sense of „belonging to one type", therefore in conformity with LATTER'S [2]) hypothesis that it is highly probable that tribes of closely allied *canorus*-individuals exist of which the female birds lay eggs of one and the same type, and the greater part of which pay attention exclusively to their own particular species of foster parents.

In 1831 SCHLEGEL [3]) wrote: „The female bird begins to lay „early in June. She goes on doing so till the middle of July. In the „case of this bird the eggs develop very slowly, namely with inter„vals of from six to eight days."

---

[1]) Altes und Neues aus dem Haushalte des Kuckucks. Leipzig. 1892.

[2]) l. c. page 53. The article itself is to be found in „Biometrika", vol. I, part II (1902).

[3]) Verhandeling ter verklaring der redenen, waarom de Koekoek geen nest maakt, en zijne Eijeren niet zelf uitbroedt. (Essay in explanation of the reasons why the Cuckoo does not build a nest, and does not hatch its eggs itself). (Natuurk. Verh. v. d. Holl. Maatsch. der Wetensch. te Haarlem, 19e dl. Haarlem, 1831).

After the lapse of 70 years the results of LINK's observations therefore form an argument in support of SCHLEGEL's opinion.

My own experience agrees more with the number adopted by SCHLEGEL than with that adopted by REY.

Other observations, on the other hand, are more in favour of REY's hypothesis, and I consider this point to be still an open question which cannot easily be answered with full certainty.

In the cases known to me, in which in this country two *canorus*-eggs were found in one nest, each of the two eggs belonged in every instance to a separate type.

In the Netherlands, as far as I am aware, *canorus*-eggs have up to the present been found in the nests of the following species of birds:

1. *Lanius excubitor L.* — Great Grey Shrike.
2. „ *collurio L.* — Redbacked Shrike.
3. *Fringilla coelebs L.* — Chaffinch. *(b.)* [1])
4. *Cannabina cannabina (L.)* — Linnet. *(f.)*
5. *Emberiza citrinella L.* — Yellow Bunting.
6. *Alauda arvensis L.* — Sky-Lark. *(g. and k.)*
7. *Motacilla alba L.* — White Wagtail. *(k.)*
8. „ *flava L.* — Blue-headed Wagtail. *(b. and k.)*
9. *Anthus trivialis (L.)* — Tree-Pipit.
10. „ *pratensis (L.)* — Meadow-Pipit. *(d.)*
11. „ *campestris (L.)* — Tawny Pipit.
12. *Certhia brachydactyla Brehm* — Short-clawed Tree-Creeper.

---

[1]) The letters between brackets occurring in the above list after certain of the English names of birds, refer to *canorus*-eggtypes depicted on plates 89 and 90, which were found in nests of those species.

13. *Accentor modularis (L.)* — Hedge-Sparrow.
14. *Sylvia sylvia (L.)* — Whitethroat. *(e.)*
15. „ *curruca (L.)* — Lesser Whitethroat.
15. „ *atricapilla (L.)* — Blackcap. *(l.)*
17. „ *simplex Latham* — Garden-Warbler. *(e.)*
18. *Hypolais hypolais (L.)* [1]) — Icterine Warbler.
19. *Calamodus schoenobaenus (L.)* — Sedge-Warbler. *(h.)*
20. *Acrocephalus strepera (Vieillot)* — Reed-Warbler. *(i.)*
21. *Acrocephalus palustris (Bechstein)* — Marsh-Warbler. *(e. and j.)*
22. *Turdus merula L.* — Blackbird.
23. *Aëdon luscinia (L.)* — Nightingale.
24. *Erithacus rubecula (L.)* — Redbreast. *(c.)*
25. *Phoenicurus phoenicurus (L.)* — Redstart. *(a.)*
26. *Saxicola oenanthe (L.)* — Wheatear.
27. *Pratincola rubetra (L.)* — Whinchat. *(a.)*

---

[1]) Mr. P. TESCH states in „De Levende Natuur" (12th Annual Series, p. 156) hat he found a *white canorus*-egg, marked with a few *red* speckles, in a nest of this species.

Family CUCULIDAE.

Cuculus canorus L. — Cuckoo.

(Plates 89—90, fig. a—l).

(Snouckaert: Avifauna Neerlandica, p. 57, No. 137).

Colour of surface of shell:	yellowish, greyish, reddish, or greenish white; greenish; bluish; greenish, reddish, violet, or brownish grey; brownish; red; pale blue; bright bluish green (with as well as without reddish yellow specks or spots when of this latter colour); pure plain white (extremely rare: only a few are known from works on the subject).
Colour of spots:	grey; greyish green; greenish, reddish or greyish brown; reddish yellow; rusty red; light or dark brown; blackish brown; when lying deeper they are of a greyish or violet grey appearance.
Average dimensions: [1])	22.4 × 16.5 millimetres.
Average weight of shell:	0.231 gram. Particularly large eggs of *Ph. phoenicurus* and *S. oenanthe* can always be distinguished from bluish green eggs of *canorus* by their weight.
Nature of shell:	characterized by a special firmness.
Texture of shell:	see general review.
Shape:	usually blunt oval; sometimes almost elliptic (see further the characteristics sub 6 in the general review.
Species of birds, with which *canorus*-eggs are found:	see general review.
Probable number of eggs in one season:	according to some, about 8, and to others about 20 is the maximum. (See general review).
Breeding season:	May—July.
Duration of incubation by the foster parents:	about 11 days.

---

[1]) See my reference to LATTER'S „Statistical investigations respecting the dimensions of Cuckoo eggs", in „Verslagen en Mededeelingen der Nederlandsche Ornithologische Vereeniging", No. 1 (1904), pages 52, etc.

XXI. Family MACROPTERYGIDAE.

Family MACROPTERYGIDAE.

Apus apus (L.) — Swift.

(Plate 91, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 53, No. 129).

Colour of surface of shell:	dull white.
Average dimensions:	24.7 × 16 millimetres.
Average weight of shell:	0.22 gram.
Texture of shell:	characterized by a fine uniform granulation (Quite incorrectly described as „coarse grained" by some authors).
Shape:	elongated.
Nest:	consists of straws, leaves, hair and feathers, all sorts of rags, etc., agglutinated together with mucous saliva, which soon dries by the action of the air, and gives it a varnished appearance.
Site of nest:	in holes and crevices in the walls of towers and other buildings; under roof-tiles, etc. in forests: in tall hollow trees; always in colonies.
Number of eggs:	2 (in exceptional cases 3-4).
Breeding season:	end of May-June.
Duration of incubation:	about 16 days.

Fam. MACROPTERYGIDAE.



a



b



c

Apus apus (L.)

XXII. Family CAPRIMULGIDAE.

Family CAPRIMULGIDAE.

Caprimulgus europaeus L. — Nightjar.

(Plate 92, fig. a-c).

(Snouckaert: Avifauna Neerlandica, page 54, No. 130).

Colour of surface of shell:	milk white or faintly dirty white. (See the subjoined remarks). *)
Colour of spots:	brown, in various tints; underlying spots and streaks are of a bluish-grey colour, and give a marbled appearance to the eggs; sometimes but little is to be seen of these underlying spots, the markings then consisting chiefly of sharply outlined spots deposited on the surface and which leave a large part of clear underground visible. The difference between the markings of the two eggs of one set is frequently very considerable.
Average dimensions:	31 × 21.9 millimetres.
Average weight of shell:	0.54 gram.
Texture of shell:	fine-grained.
Shape:	oval; in by far the most eggs, the big end cannot be distinguished from the pointed end.
Breeding-site:	on the bare sand or on moss, in open spots covered with heather and shrubs, in a shady spot, mostly quite near a shrub, and by preference in a spot where there is some gravel; also sometimes on mossy tree stumps.
Number of eggs:	two.
Breeding season:	June (sometimes late in May) — July.
Duration of incubation:	about 17 days.
*** Remarks:**	In the Catalogue of the Collection of Birds' eggs in the British Museum (Vol. III, page 71) those eggs are described as a separate type which although having normal markings, have a *cream*-or pale *salmon*-coloured underground The cream-coloured eggs should, in my opinion, be regarded as transitions towards-and the salmon-coloured eggs (of which the markings will no doubt be a darker shade of the same colour) as belonging to the real *erythristic* variations of the ordinary type. In this connection it may be stated here that according to certain descriptions [1]), in the case of several exotic *Caprimulgus*-species the erythristic colouring seems to be the *normal* one or at any rate frequently occurs.

[1]) See the above mentioned Catalogue, Vol. III (London 1903) pages 67—74, and NEHRKORN, Katalog der Eiersammlung (II. Aufl., Berlin, 1910), pages 130—132.



Fam. CAPRIMULGIDAE.



a



b



c

Caprimulgus europaeus L.

XXIII. Family UPUPIDAE.

THE EGGSHELL OF UPUPA EPOPS L.

(Plate 93).

My own examination of the *epops*-eggshell gave the following results which deviate on certain points from what others have written on the subject [1]):

1. that the lime layer, situated immediately below the glutinous pigment layer, is always coloured white (not sometimes yellow), irrespective of the colour or variegation of the pigment;
2. that — as is the case with every species of egg — pores occur in the lime layers, showing a great resemblance in character as well as in number and arrangement to those of *Picinae*-eggs;
3. that the inner wall of the mouth of the pores is *white*, notwithstanding the pigment spread over the uppermost lime layer, which circumstance is caused by the carbonate of lime which is finally deposited over the pigment layer and is absorbed by that inner wall;
4. that the extremely thin layer of carbonate of lime mentioned above under 3, which is absent occasionally, is sometimes

---

[1]) See: NAUMANN (new ed.), Band IV, p. 386; Dr. E. REY, Die Eier der Vögel Mitteleuropas, p. 90; THIENEMANN (1845—'54), l.c., p. 111.

Fam. UPUPIDAE.



a



b



c

Upupa epops L.

united like a veil and covers the whole surface of the shell, and in other instances is more or less disintegrated and forms a larger or smaller number of spots or flecks of a greyish white colour;

5. that one of the fundamental lime layers is coloured bluish green (contains oocyanine), in consequence of which all *epops*-eggs, whatever their external colouring may be, show up pale sea-green when light shines through them;
6. that the texture of the shell of the *epops*-egg is closely allied to that of *Picinae*-eggs, which fact becomes clearly perceptible when the „veil" as well as the pigment layer of an *epops*-egg, and — for the sake of a correct comparison — the glutinous layer of a *Picinae*-egg which gives the gloss to the shell, have been removed; only when this has been done it is possible to judge and compare the true nature of the texture; the strong gloss of *Picinae*-eggs, for instance, has no connection with the texture of the shell, and is caused by the nature and quantity of gluten which is spread over the uppermost lime layer, and by which in the case of *epops*-eggs, as well as in that of other coloured eggshells, the pigment is adhered;
7. that some *epops*-eggs exhibit the longitudinal grooves which are so especially typical of *Dendrocopus major*.

The characteristic feature of *epops*-eggs consists therefore really in the „veil" layer (mentioned above under 4) which is usually spread over it, and which as an exception, is also finally deposited on the completely pigmented surface of the shell of eggs of other species of birds of various Families (very frequently on eggs of *Totanus totanus*, and often much more closely than on those of *epops*).

Family UPUPIDAE.

Upupa epops L. — Hoopoe.

(Plate 93, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 58, No. 139).

Colour of surface of shell:	varies, in different shades, from: (1) grey-white up to greenish or brownish grey; (2) yellowish white up to dull brown. Accessory spots and smears, caused in the nest-hole by humus acids, etc., frequently occur.
Average dimensions:	26 × 17.6 millimetres.
Average weight of shell:	0.34 gram.
Shape:	mostly elongated.
Nest:	in hollow trees the nesting material consists of decayed wood found in the holes; in other nesting places it consists of vegetable material and feathers, sometimes mixed with a little dry cow dung.
Site of nest:	in hollow trees; also sometimes in holes in walls, under roots, and similar places.
Number of eggs:	6—8, mostly 7.
Breeding season:	May—beginning of July.
Duration of incubation:	about 16 days.

XXIV. Family ALCEDINIDAE.

Family ALCEDINIDAE.

Alcedo ispida L. — Kingfisher.

(Plate 94, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 59, No. 141).

Colour of surface of shell:	white, but of a different tint to that of *Picinae*-eggs; very glossy.
Average dimensions:	22.6 × 19 millimetres.
Average weight of shell:	0.2 gram.
Texture of shell:	finely granulated.
Shape:	rounded, producing equal halves when cut transversely.
Nest:	heaped up fish bones and scales serve as a layer on which the eggs lie.
Site of nest:	in burrows, usually about 1 Metre long, excavated by the bird itself in steep sandy banks and similar places, sometimes at some distance from water.
Number of eggs:	6—7.
Breeding season:	mid-April—July.
Duration of incubation:	about 15 days.

Fam. ALCEDINIDAE.



a



b



c

Alcedo ispida L.

XXV. Family BUBONIDAE.

XXVI. Family STRIGIDAE.

Families BUBONIDAE AND STRIGIDAE.

(Plates 95—99).

The distinguishing feature of the texture of the shell of all the species of these Families is the fine, uniform lime-granulation [1]) which — particularly in the case of the genera *Athene, Asio* and *Syrnium* — is often accompanied by the presence of small prominences (in my opinion: local accumulations of lime concrements), of which larger ones are frequently found close together near the ends of the eggs, and which sometimes also occur in the shape of lines. It is a fact, however, that eggs of many other species of birds also exhibit these prominences. Longitudinal or latitudinal grooves, in which a large number of pores usually occur close together, are mentioned by REY, solely in the case of *aluco*, as frequently occurring; they are, however, also found on eggs of other species, although sometimes in a less pronounced fashion than on those of *aluco*. In no case can they obtain as a characteristic proper exclusively to *aluco*.

The eggs, *Strix* excepted, are of a more or less spherical shape, and in the case of *Athene* and *Syrnium* they are even distinctly spherical.

---

[1]) For the purpose of examining the texture of eggshells I recommend that they should be magnified 16 times. In this connection it should be borne in mind that in general the granulation of eggshells is less uniform at the pointed end and consequently seems coarser there than elsewhere.

The eggshell is plain [1]) white, although not always of an equally pure tint; or it inclines to cream colour. [2]) When light shines through them the eggshells of *Strix* are purest in tint; then follow those of *Athene* and *Syrnium*; whilst those of *Asio* are yellowish. The pores of the shell (when magnified 16 times) are plainly visible. It appears to me that their number is smallest in *Asio* and largest in *Athene*. [3])

The genus *Strix* deviates oologically not only in shape but also in composition of the uppermost layer of carbonate of lime, from the other genera.

As regards the mutual oological relation between the genera which come into consideration here, this relation places *Athene* on a line with *Syrnium;* it supports the union of *otus* and *accipitrina* in the same genus *(Asio)*; and makes *Strix* occupy an exceptional standpoint.

Oological points of contact (in texture of the shell) with other Families, agreeing with the results of phylogenetic investigations, must, in so far as species of birds breeding in the Netherlands are concerned, be sought for in *Apus* and *Caprimulgus*.

---

[1]) REY mentions two cases in which in his opinion markings caused by real pigmentation were present: one in *Syrnium aluco L.*, the second in *Bubo bubo L.*; in the latter case the character of the markings, REY says, reminded him of that of eggs of *Milvus korschun* (S. G. GMELIN). See: „Ornith. Monatsber.", 1893, No. 4. and REY'S „Eier der Vögel Mitteleuropa's, plate 122, fig. 3.

[2]) OATES asserts that all newly laid eggs of *Strigiformes* are *invariably plain white*, and that it is only after incubation that they acquire a cream coloured or yellowish tint. (See, contra this assertion, what is stated in the present publication respecting *aluco* and *accipitrina*).

[3]) I do not understand how OATES could say that only the larger eggs of the *Strigiformes* exhibit pores; in those of *Athene noctua* e.g., they are plainly visible to the unaided eye.

Family BUBONIDAE.

Athene noctua (Scopoli) — Little Owl.

(Plate 95, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 61, No. 145).

Colour of surface of shell:	white, when light shines through the eggshell it is somewhat yellowish.
Average dimensions:	33.9 × 28.3 millimetres.
Average weight of shell:	1.2 gram.
Texture of shell:	see the general review of the Family.
Shape:	short oval.
Nest:	none is made; the eggs lie on decayed wood, fragments of bricks and mortar, etc.
Site of nest:	in hollow trees, especially in pollard willows, in old walls, towers, etc.; also in rabbit holes.
Number of eggs:	usually 4—5, sometimes 6—7.
Breeding season:	May.
Duration of incubation:	about 16 days.
Remarks:	Of round-shaped dwarf eggs of *Gallus domesticus*, of which eggs of *Athene noctua (Scopoli)* remind us, the texture of the thicker shell, which when light penetrates through, is of a light *reddish* yellow, is quite different; the pores are also different.

Fam. BUBONIDAE.



a



b



c

Athene noctua (Scopoli).

Family BUBONIDAE.

Asio otus (L.) — Long-eared Owl.

(Plate 96, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 61, No. 146).

Colour of surface of shell:	white.
Average dimensions:	40 × 32.2 millimetres.
Average weight of shell:	1.57 gram.
Texture of shell:	see the general review of the Family.
Shape:	varies between rounded and oblong oval.
Nest:	this species generally uses deserted nests of Crows, Birds of Prey, Doves or Squirrel-dreys.
Site of nest:	see above.
Number of eggs:	4—7, mostly 5—6.
Breeding season:	April—beginning of July.
Duration of incubation:	3—4 weeks.
Remarks:	Amongst these eggs there are some which remind us to some extent of those of *flammea*; they are, however, rounded off more equally at the two ends; the peculiar character of the granulation of the latter species excludes confusion in every case.

Fam. BUBONIDAE.



a



b



c

Asio otus (L.)

Family BUBONIDAE.

Asio accipitrina (Pallas) — Short-eared Owl.

(Plate 97, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 62, No. 147).

Colour of surface of shell:	white, mostly slightly cream coloured; when light falls through them the shell is slightly more yellowish than that of *otus*, which circumstance is in agreement with the above mentioned shade of colour.
Average dimensions:	40 × 30.4 millimetres.
Average weight of shell:	1.34 gram.
Texture of shell:	the pores are less distinct than on *otus*; see further the general review of the Family.
Shape:	usually slightly more slender than that of *otus*.
Nest:	the eggs lie either on the bare ground or on a layer of dry pieces of plants.
Site of nest:	on the ground, in damp places between tall grass, or between reeds; between heather and also sometimes in corn fields.
Number of eggs:	4—6, sometimes 7—8.
Breeding season:	April—May.
Duration of incubation:	about 4 weeks.

Fam. BUBONIDAE.



a



b



c

Asio accipitrina (Pallas).

Family BUBONIDAE.

Syrnium aluco (L.) — Tawny Owl.

(Plate 98, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 62, No. 148).

Colour of surface of shell: white.

THIENEMANN[1]), only, distinguishes - rightly, I believe - two types in respect of tint: 1°. pure white, and 2°. dirty white (grey-yellowish) eggs; the shade, mentioned under 2°. has in my opinion no connection with any change which the eggshell undergoes through incubation, but is proper to it „ab utero".
Brownish spots, which these eggs frequently exhibit, arise from impregnation with humus acids from the decayed parts of plants on which the eggs lie.

Average dimensions: 47 × 37.9 millimetres.

Average weight of shell: 2.8 grams.

Texture of shell: see the general review of the Family.

Shape: the ends of the eggs are mostly both of the same shape.

Nest: the eggs lie on a layer consisting of a little moss, a few stalks and feathers, or they lie immediately on decayed wood.

Site of nest: in hollow trees; also in deserted nests of Crows and Birds of Prey, and in holes in the ground, e.g. in rabbit burrows.

Number of eggs: 3—5.

Breeding season: March—beginning of May.

Duration of incubation: 3 to 4 weeks.

---

[1]) Systematische Darstellung der Fortpflanzung der Vögel Europa's (Leipzig, 1825).

Family STRIGIDAE.

Strix flammea L. — Barn-Owl.

(Plate 99, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 62, N°. 149).

Colour of surface of shell:	dull lime white.
Average dimensions:	39,5 × 30.7 millimetres.
Average weight of shell:	1.75 gram.
Texture of shell:	see the general review of the Family.
Shape:	oval; compared with those of the *Bubonidae* they are of all the species the most elongated towards the pointed end, which is blunt.
Nest:	the eggs lie without any intervening layer on fragments of stone and mortar, straw, decayed wood, etc.
Site of nest:	in holes and cracks in towers, old walls, and similar structures; in lofts of barns, etc.; also in hollow trees. [1])
Number of eggs:	4—7.
Breeding season:	April—September; however also found breeding until in December.
Duration of incubation:	about 3 weeks.

---

[1]) See: Verslagen en Mededeelingen der „Nederlandsche Ornithologische Vereeniging", No. 3, page 33.

Fam. BUBONIDAE.



a



b



c

Syrnium aluco (L.)

Fam. STRIGIDAE.



a



b



c

Strix flammea L.

„OOLOGIA NEERLANDICA"

EGGS

OF

BIRDS

BREEDING IN THE NETHERLANDS

BY

A. A. VAN PELT LECHNER,

Member of the Board of the „Nederlandsche Ornithologische Vereeniging"
(Netherland Ornithological Society).

With coloured plates made direct from specimens
in the author's collection.



THE HAGUE
MARTINUS NIJHOFF
1911.

Part 1. Price £ 1.1.0 net.

OOLOGIA NEERLANDICA.

Contents of Part 1.

Text: Description of plates 1—62.

Plates: 1—10, 12, 13, 15, 16, 20, 23, 25, 27—29, 33—35, 37, 39—44, 46, 47, 76, 83, 84.

Together 35 plates.

Sept. 1911. MARTINUS NIJHOFF.

„OOLOGIA NEERLANDICA"

57.82.15.6(492)

EGGS

OF

BIRDS

BREEDING IN THE NETHERLANDS

BY

A. A. VAN PELT LECHNER,

Member of the Board of the „Nederlandsche Ornithologische Vereeniging"
(Netherland Ornithological Society).

With coloured plates made direct from specimens
in the author's collection.



THE HAGUE
MARTINUS NIJHOFF
1911.

Part 2.

Price £ 1.1.0 net.

OOLOGIA NEERLANDICA.

Contents of Part II.

Text: Description of plates 63—79.

Plates: 11, 14, 17—19, 21, 22, 24, 26, 30—32, 36, 38, 85—88, 91, 94—99, 110—112, 120.

Together 29 plates.

December 1911. MARTINUS NIJHOFF.

„OOLOGIA NEERLANDICA"

OOLOGIA NEERLANDICA.

Contents of Part III.

Text: Description of plates 80—112.

Plates: 48—62, 64—71, 73—75, 78, 81, 82, 90, 93, 106—109, 116.

Together 36 plates.

May 1912. MARTINUS NIJHOFF.

'DS

A. A. VAN PELT LECHNER,

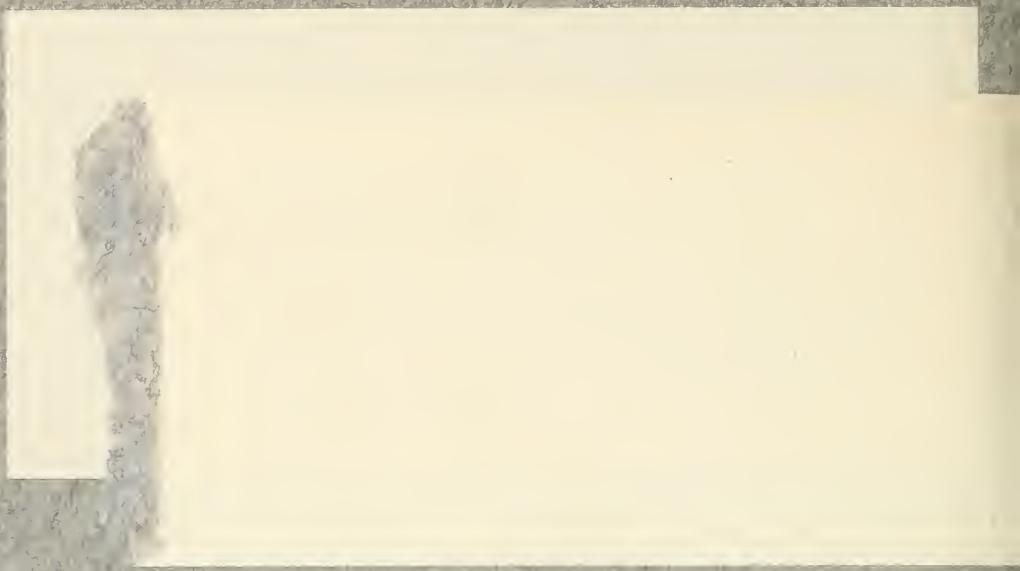
Member of the Board of the „Nederlandsche Ornithologische Vereeniging" (Netherland Ornithological Society).

With coloured plates made direct from specimens in the author's collection.



THE HAGUE
MARTINUS NIJHOFF
1912.

Part 3. Price £ 1.1.0 net.



„OOLOGIA NEERLANDICA"

EGGS

OF

BIRDS

BREEDING IN THE NETHERLANDS

BY

A. A. VAN PELT LECHNER,

Member of the Board of the „Nederlandsche Ornithologische Vereeniging"
(Netherland Ornithological Society).

With coloured plates made direct from specimens
in the author's collection.



THE HAGUE
MARTINUS NIJHOFF
1912.

Part 3.

Price £ 1.1.0 net.

9129-119.2

Oologia Ne
Vol. 1
Part 2

Date Loaned	Borrower's

Oologia Neerlandica
Vol. 1 1910-13
Part 2
59.82:15.6(49)

AMNH LIBRARY
100099993